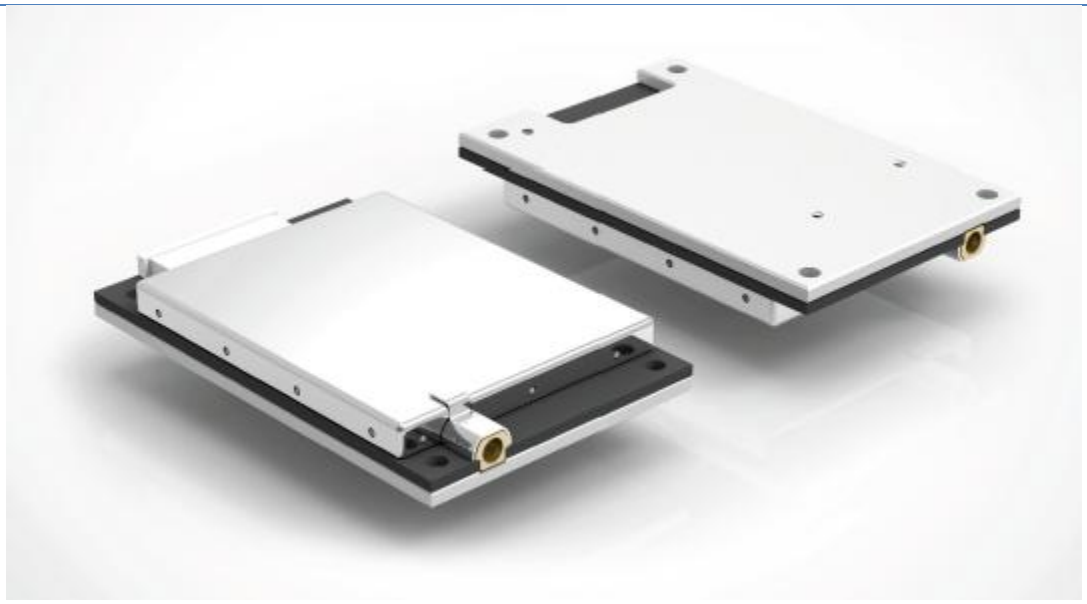
SHENZHEN CHAINWAY INFORMATION TECHNOLOGY CO., LTD

CM2000/CM500 Module User Manual



Statement

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Chapter 1 Product Intro

1.1 Intro

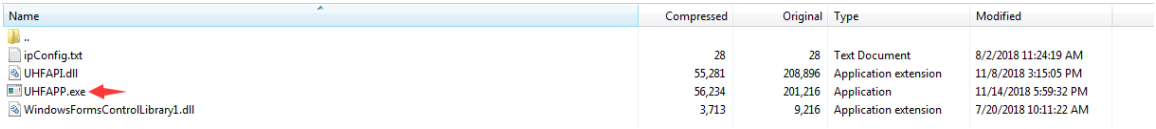
Chainway CM2000-1 is a single channel UHF RFID reader module with high performance. It can be integrated in mobile UHF RFID readers, fixed UHF RFID readers, UHF card readers, integrated RFID readers and etc. With high integration level, this reliable module is small in size, low in power consumption. It is also resistant to electromagnetic interference and good at heat dispersion. All make it to absolutely satisfy needs of all environments. The module appeals to challenging industries like warehousing, logistics, apparel, production lines and such.

1.2 Brief

CM2000 module can be adopted with multiple types of antennas with output powers as 5dBi, 9dBi, 12dBi. The port is SMA and development board, Windows SDK and demos are provided.

1.3 Device List

1. CM2000 module, development board, FPC, 12V/5A power adaptor.
2. UHF antennas: 6dBi, 9dBi, 12dBi etc.
3. Feeder line that has adopted with SMA male port, the port on other side needs to be equipped with antenna.
4. RJ45 Ethernet cable.
5. Serial port cable.
6. Demo software, it includes 4 necessary files and UDFAPP.exe is execute program as pic. 1.

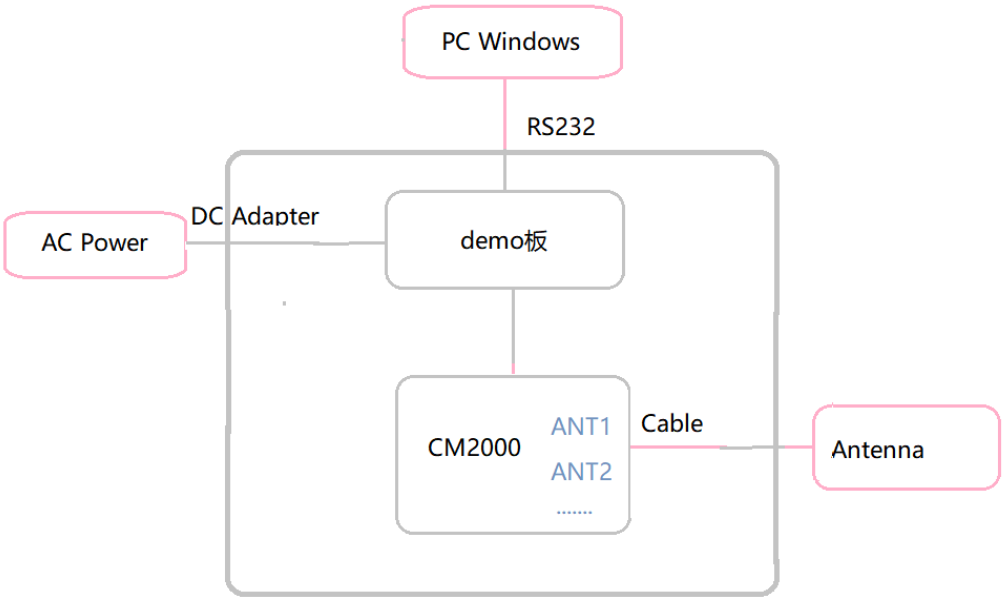


Name	Compressed	Original	Type	Modified
..				
ipConfig.txt	28	28	Text Document	8/2/2018 11:24:19 AM
UHFAPI.dll	55,281	208,896	Application extension	11/8/2018 3:15:05 PM
UHFAPP.exe	56,234	201,216	Application	11/14/2018 5:59:32 PM
WindowsFormsControlLibrary1.dll	3,713	9,216	Application extension	7/20/2018 10:11:22 AM

Pic.1

1.4 Device installation

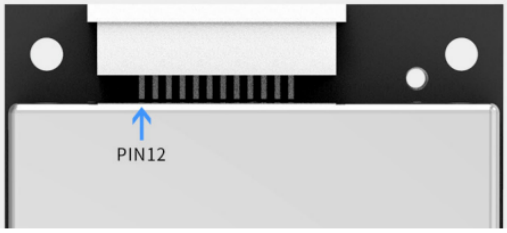
CM2000 can be connected as Pic.2. PC can connect with development board by cable. Single CM2000 module can connect with different amounts of antennas according to different models.



Pic.2

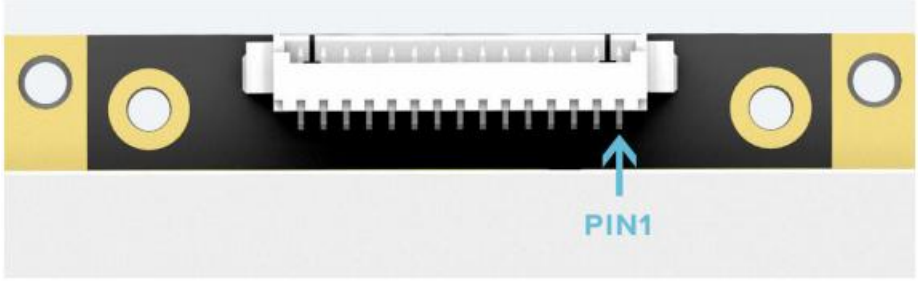
Chapter 2 Module Interface Definition

2.1 CM2000-1/CM500-1



PIN#	Interface	Description
1	VIN	3.5-5.25VDC
2	VIN	
3	GND	Ground
4	GND	Ground
5	EN	High LLT level (>1.2V) boot the module Low LLT level (<0.4V) out the module
6	IO1	Reserved GPIO 3.3V TTL level
7	IO2	Reserved GPIO 3.3V TTL level
8	IO3	Reserved GPIO 3.3V TTL level
9	RXD	UART receive 3.3V TTL level
10	TXD	UART transmit 3.3V TTL level
11	USB_DP	USB_DATA(+)
12	USB_DM	USB_DATA(-)

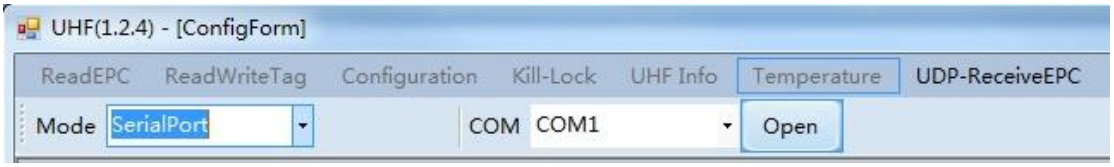
2.2 CM2000-4/CM2000-8/CM2000-16



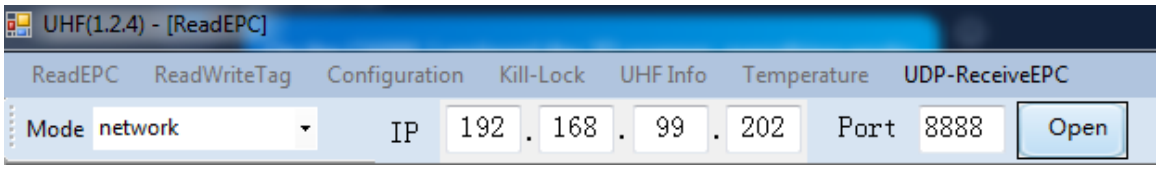
PIN	Interface	Description
1	GND	Positive
2	GND	
3	VIN	Negative Input voltage range：3.5-5.25 VDC
4	VIN	
5	GPIO3	Reserved GPIO 3.3V TTL level
6	GPIO4	Reserved GPIO 3.3V TTL level
7	GPIOI	Reserved GPIO 3.3V TTL level
8	BUZZ	Driving 3.3V buzzer
9	UART_RXD	UART receive 3.3V TTL level
10	UART_TXD	UART send 3.3V TTL level
11	USB_DM	USB_DATA(-)
12	USB_DP	USB DATA(+)
13	GPIO2	Reserved GPIO 3.3V TTL level
14	EN	>1.25V power-on mode <1.18V standby mode
15	GPIO_5	Reserved GPIO 3.3V TTL level

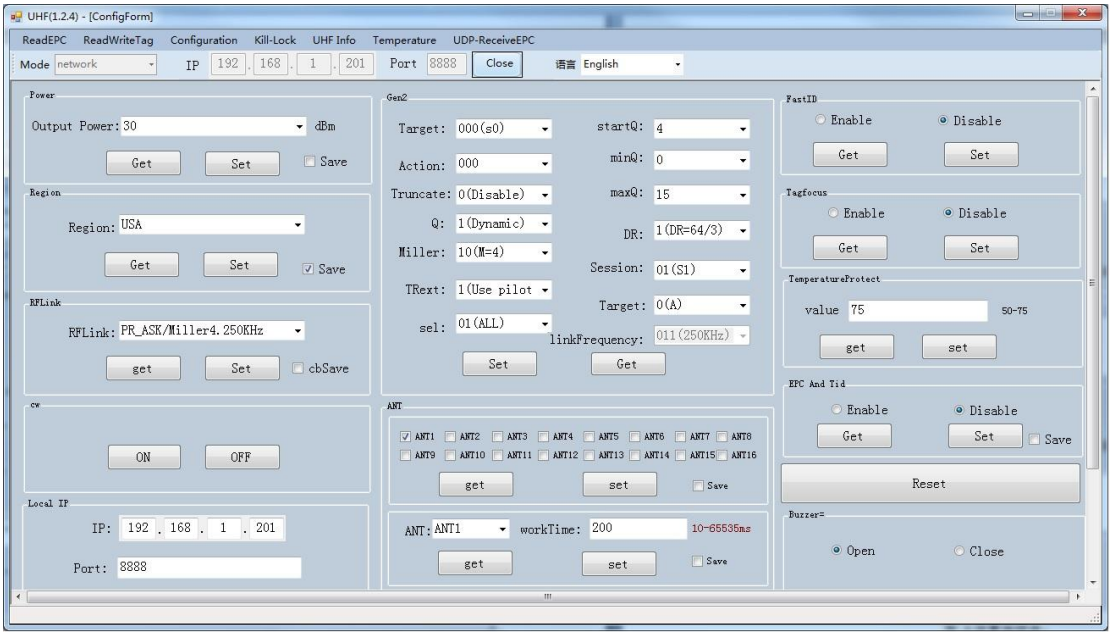
2.3 Parameter Setup

Double click UHFAPP.exe to enter software, and connect with device through serial port line. Select **Mode** to “SerialPort”, select COM to according serial port on PC. Click “Open” to connect with device, initiation page is as follows:



If RJ45 has been used as connection, communication **Mode** needs to be selected as “network” and input IP address and port number (default IP address is 192.168.99.202, Port is 8888.) Then click “Open” to connect PC and device. After PC and device have been connected, the status page is as follows:

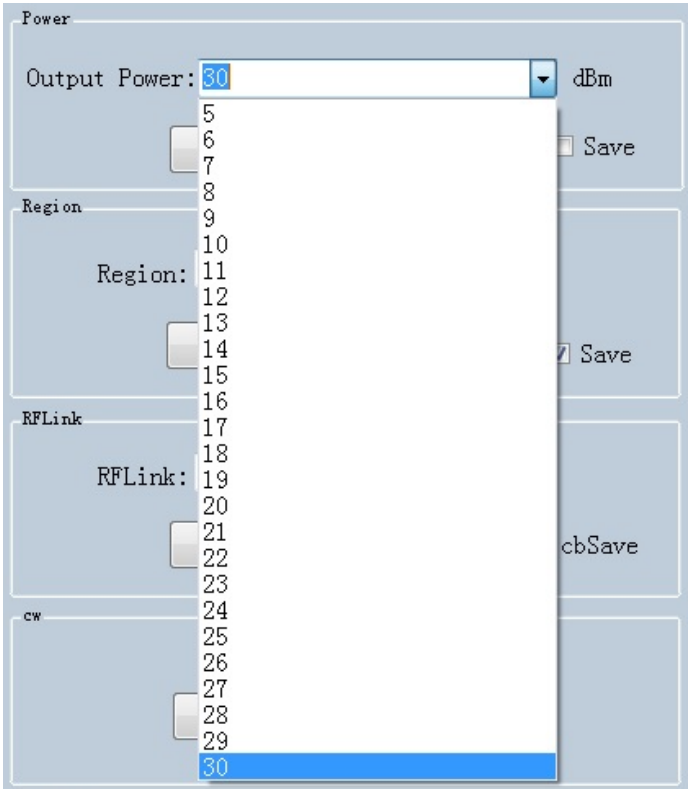



UHF(1.2.4) - [ConfigForm]
ReadEPC
ReadWriteTag
Configuration
Kill-Lock
UHF Info
Temperature
UDP-ReceiveEPC
Mode
network
IP
192 . 168 . 1 . 201
Port
8888
Close
语言
English
Power
Output Power:
30
dBm
Get
Set
Save
Region
Region:
USA
Get
Set
Save
RFLink
RFLink:
PR_ASK/Miller4.250KHz
get
Set
cbSave
cw
ON
OFF
Local IP
IP:
192 . 168 . 1 . 201
Port:
8888
Gen2
Target:
000(s0)
Action:
000
Truncate:
0(Disable)
Q:
1(Dynamic)
Miller:
10(M=4)
TRext:
1(Use pilot
sel:
01(ALL)
Set
startQ:
4
minQ:
0
maxQ:
15
DR:
1(DR=64/3)
Session:
01(S1)
Target:
0(A)
linkFrequency:
011(250KHz)
Get
ANT
ANT1
ANT2
ANT3
ANT4
ANT5
ANT6
ANT7
ANT8
ANT9
ANT10
ANT11
ANT12
ANT13
ANT14
ANT15
ANT16
get
set
Save
ANT:
ANT1
workTime:
200
10-65535ms
get
set
Save
FastID
Enable
Disable
Get
Set
Tagfocus
Enable
Disable
Get
Set
TemperatureProtect
value
75
50-75
get
set
EPC And Tid
Enable
Disable
Get
Set
Save
Reset
Buzzer
Open
Close

After device has connected with PC, the parameters on interface will be empty. Click “Get” on each option to collect device parameters.

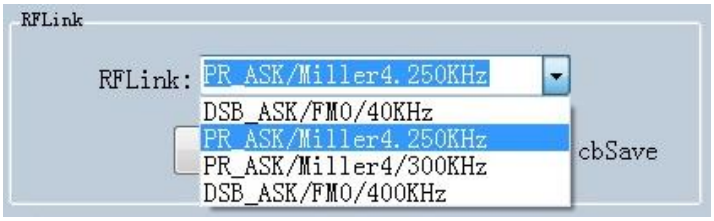
Click “Set” on the page, user can adjust necessary parameters, some parameters are default values.

Output power can be set in range of 5 dBm to 30 dBm as following picture, after select value, click “Set” button. If “Save” has been selected, current parameters will be saved after power off device.

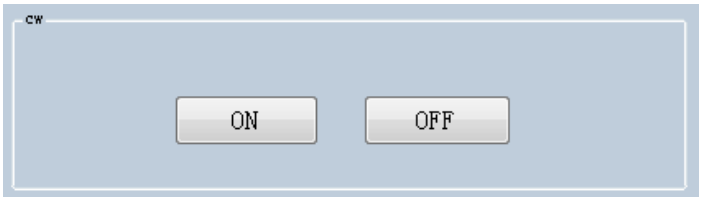


Set regions:

Set RFLink:



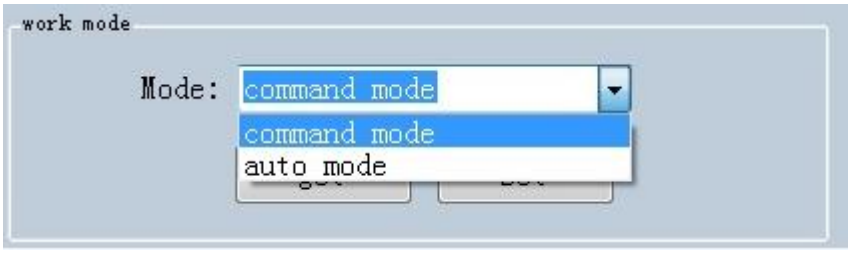
Set continuous wave:



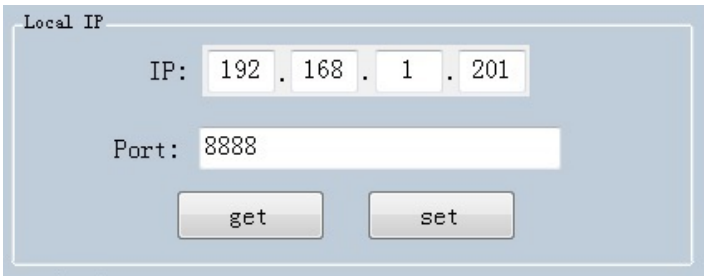
There are two work modes can be selected, “command mode” and “auto mode”.

Under “command mode”, user could collect tag data in “Read EPC” page, click “Start” to send command to device on PC, click “Stop” to stop collecting tag data.

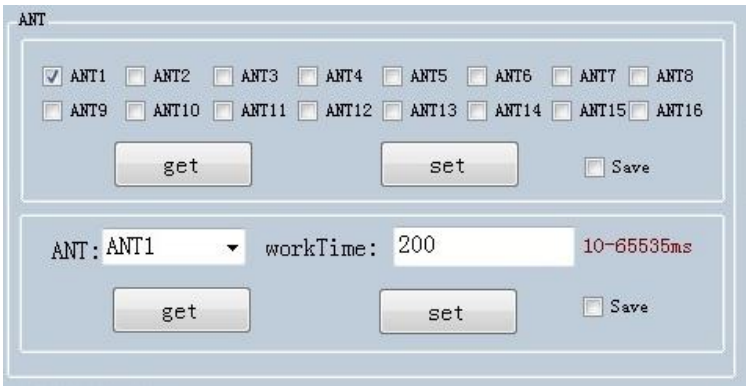
Under “auto mode”, user could collect tag data in “UDP-ReceiveEPC” page, click “Start” to receive data, click “Stop” to stop receiving data. After selecting “auto mode”, the device needs to be restarted.



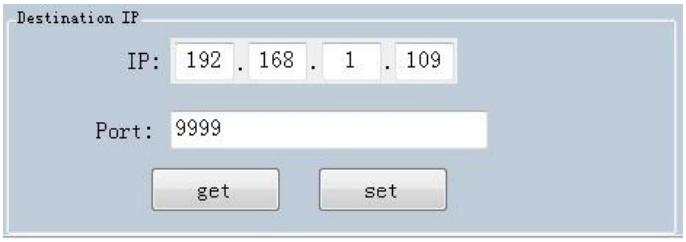
Set IP address and make sure PC and device have used in same segment. For example, if IP address of PC is 192.168.1.109, mask is 255.255.255.0, the device IP address can be set to 192.168.1.201, port number doesn't need to be changed.



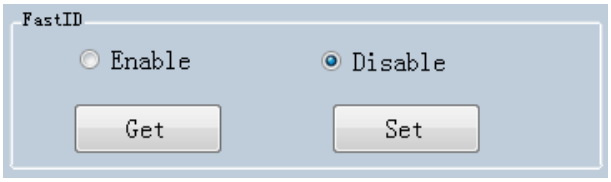
Set antenna connection, there are 4 I/O ports on device and have been marked as ANT1, ANT2, ANT3, ANT4. User needs to select antenna which has been connected and click "set".



Set destination IP address and port number, destination IP address is the IP address which used for reading tag data under "auto mode".



Set FastID:



Set TagFocus:

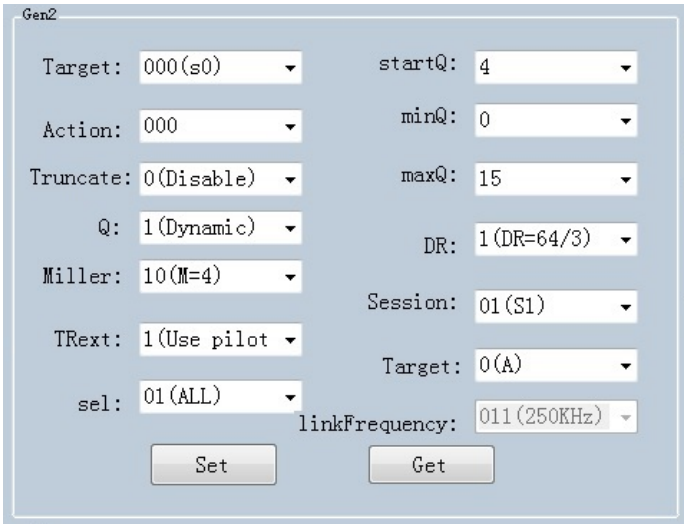
Set protective temp. It means to setup highest operating temperature of UHF module:

Set EPC and TID:

Reset, click “Reset” button to restore device to default value. After reset, user needs to click “Close” and “Open” to reconnect the device.

Set Buzzer, click “Open” to switch on buzzer function, device will play notification sound when reading tags.

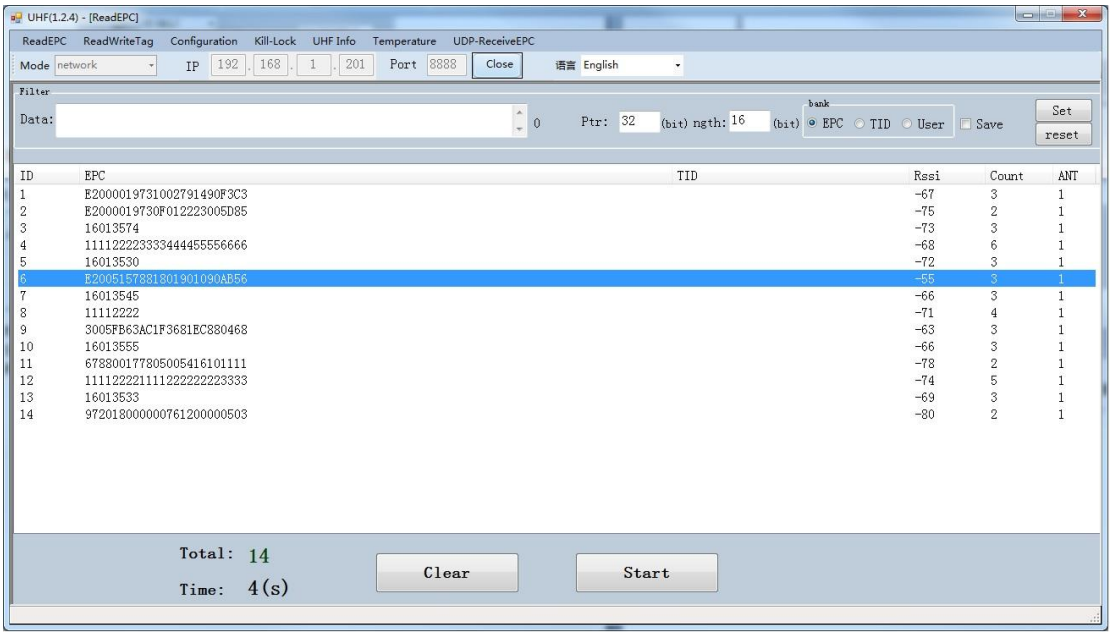
Set Gen2, this parameter needs to be adjusted by actual requirements.



Chapter 3 Read and Write EPC

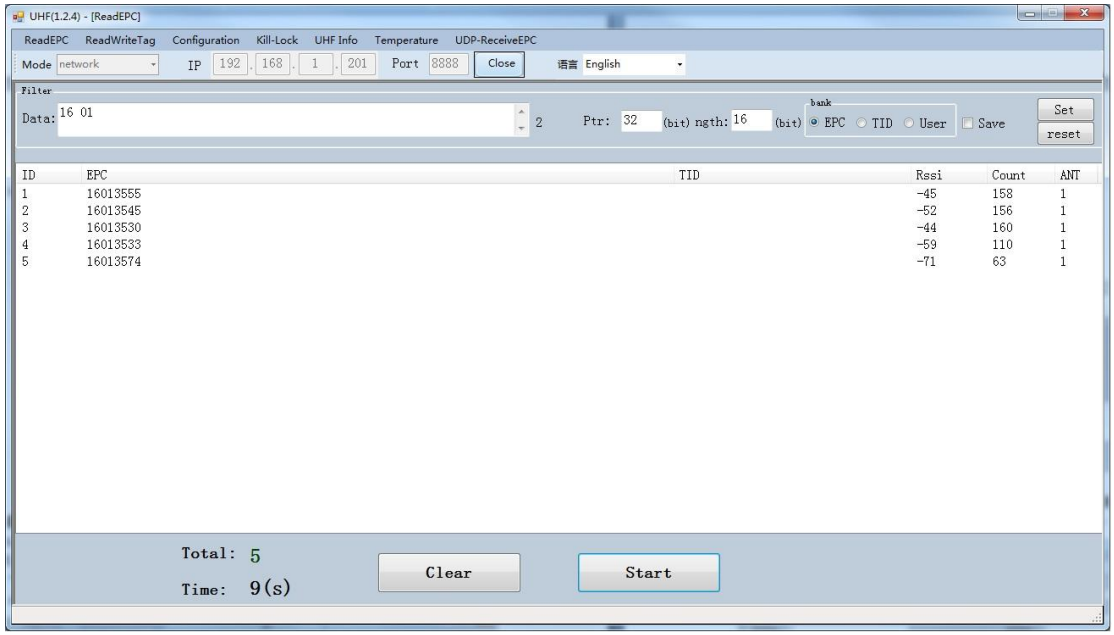
3.1 Read EPC

Click “ReadEPC” in menu to enter EPC page, click “Start” to read tags, click “Stop” to stop reading. The EPC, RSSI, Count number and ANT number (antenna channel) will be recorded in window as following pic:



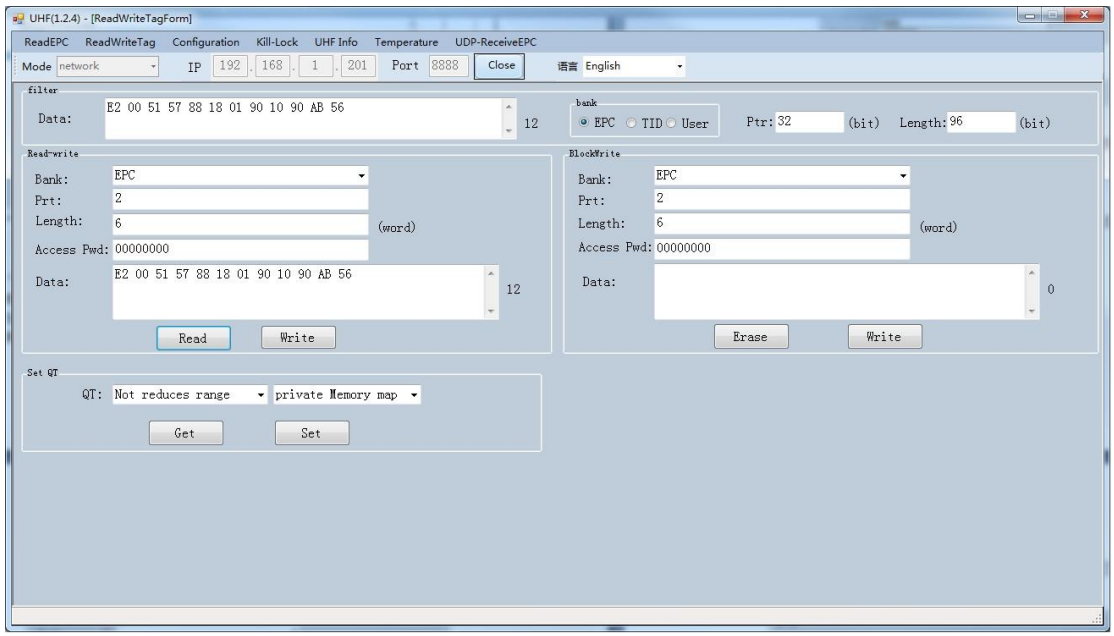
User could enter data in “Filter” to filter EPC of special tags, the maximum filter DL is 96 bits. User needs to setup data, initial address, data length and click “Set”. After filtered data has been set, the device will read and search for the tag which has been filtered.

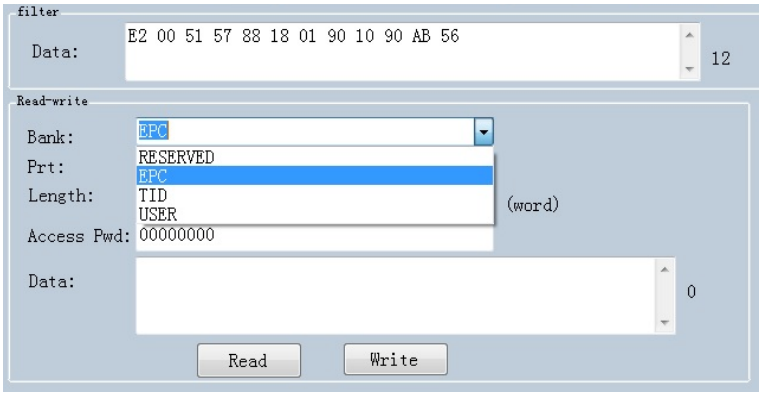
For example: enter 16 01 in “Data”, initial address data length is 32(bit), length is 16(bit), select EPC in “bank”, click “Set” and click “Start” to start scanning tags which the address start at 16 01:



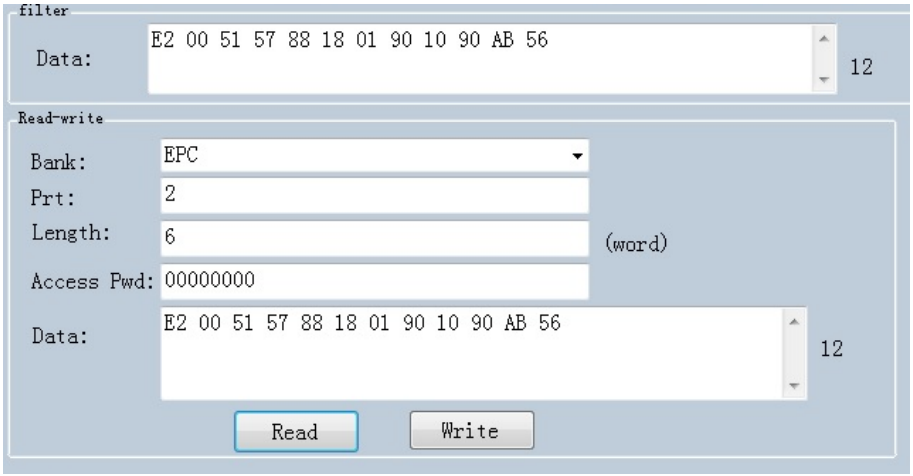
3.2 Read & Write Tags

Click “ReadWriteTag” to enter its page, TID area can be read only, RESERVED, EPC and USER areas can be read and written.

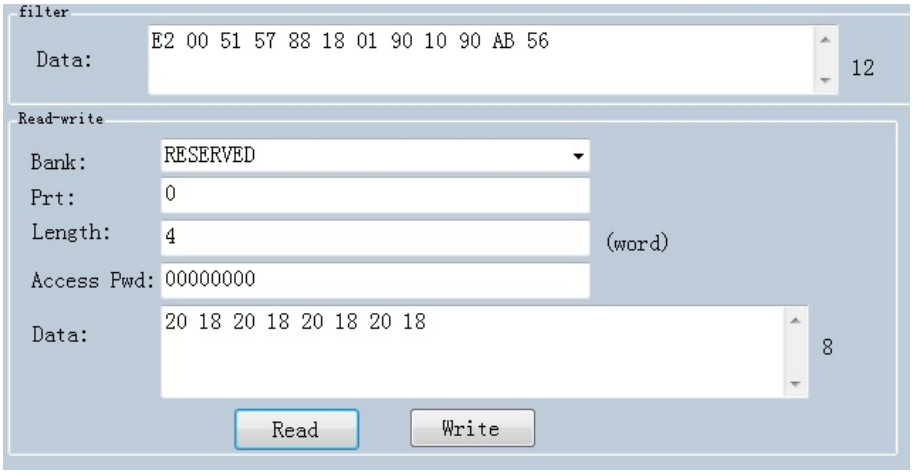




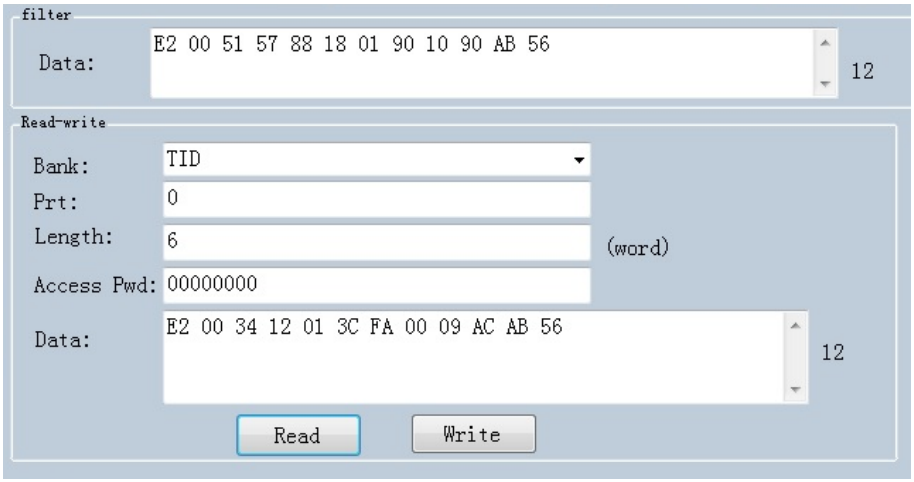
Click one option in “Read-write” window to enter tag reading mode, EPC will be automatically copied into “Data” block in filter, default option is EPC reading, click “Read” to read 12 bytes of EPC area.



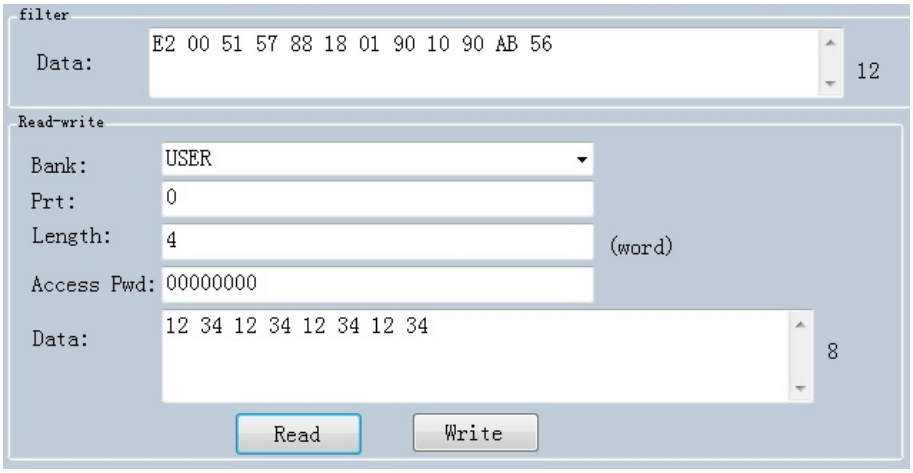
For “RESERVED” area, user could read 4 words at maximum, previous 2 words are password of KILL function, last 2 words are access passwords:



Read TID area:



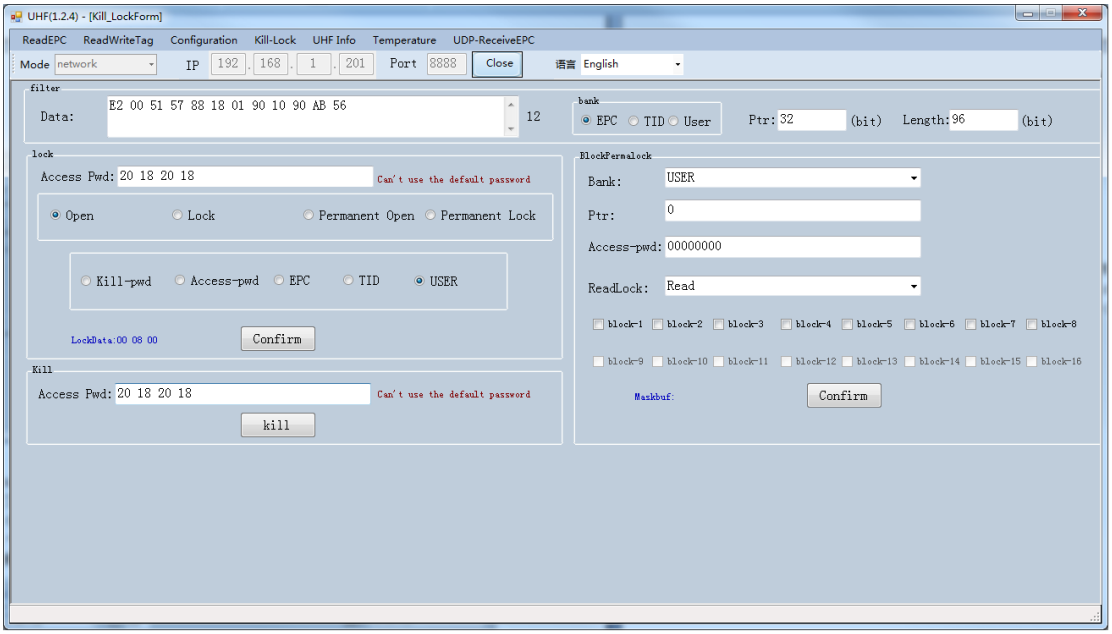
Read USER area:

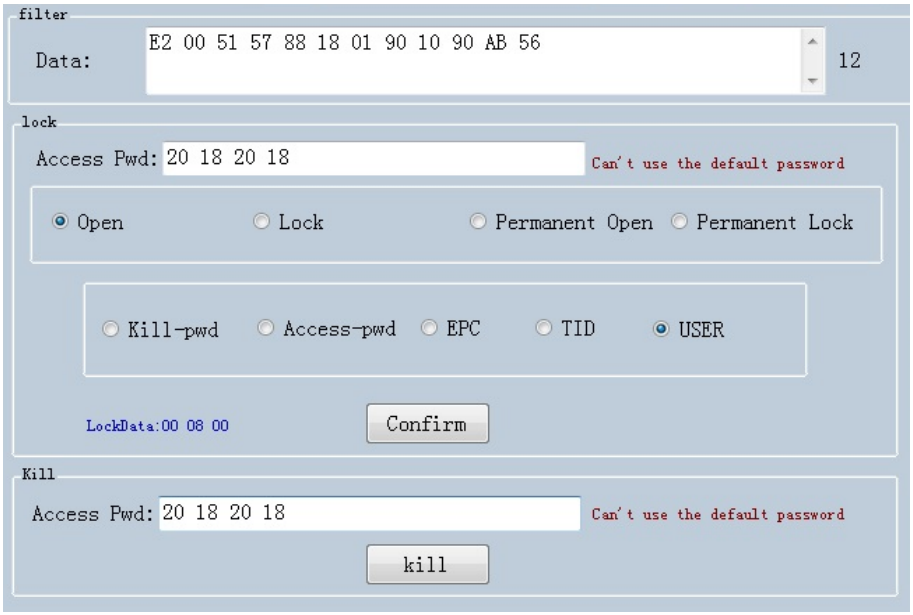


Data could be written in EPC, RESERVED and USER areas, select according areas and input initial address, length, input data into “Data” window and click “Write” to write data into according areas.

3.3 Lock UHF Tag

Click “Kill-Lock” in main menu to enter Tag locking function. For this function, user could execute “Lock”, “Kill”, “Open”, “Permanent Open” and “Permanent Lock”, to execute “Lock” function, password is needed. If user wants to kill UHF tag, need to enter password and tag will be wasted permanently.

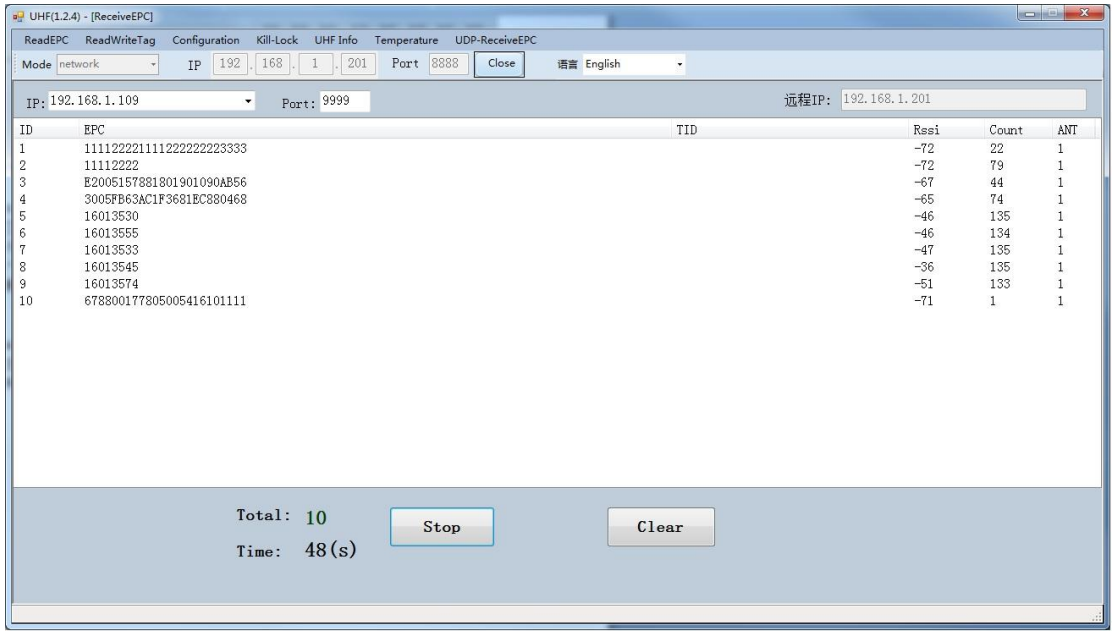




3.4 UDP-ReceiveEPC

After auto mode has been selected, restart device and select UDP-ReceiveEPC, click “Open” to connect device and select IP address of PC in address column, click “Stop” to stop receiving UHF tag data.

If user needs to escape auto work mode, “command mode” needs to be selected in work mode.



3.5 Others

Click “UHF information” in main menu to read hardware version and firmware version, click “Temperature” to read current temperature value of UHF module.

Warning

1) This product conforms with standard EN50332

2) Parameters of Power adapter: INPUT: DC12V/2000mA

3) Extreme Operating Temperature : -10~+45℃

4) To comply with RF exposure requirements, a minimum separation distance of 20cm must be maintained between the user’s body and, including the antenna.

5) This product can be used across EU member states.

6) RF ID:

RF ID: 865.7-867.5 MHz, Maximum power: 11.956dBm

Declaration of Conformity

Hereby, Shenzhen Chainway Information Technology Co.,Ltd. declares that this UHF RFID Module is in compliance with the essential requirements and other relevant provisions of directive 2014/53/EU.

FCC Statement

This device complies with part 15 of the FCC rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2)

this device must accept any interference received, including interference that may cause undesired operation.

Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

NOTE: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are

designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates uses and can radiate radio frequency

energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee

that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be

determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

The device has been evaluated to meet general RF exposure requirement. The device can be used in portable exposure condition without restriction.

FCC ID: 2AC6ACM2000-1

Installation Guidance

The final host / module combination may also need to be evaluated against the FCC Part 15B criteria for unintentional radiators in order to be properly authorized for operation as a Part 15 digital device.

The user's manual or instruction manual for an intentional or unintentional radiator shall caution the user that changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment. In cases where the manual is provided only in a form other than paper, such as on a computer disk or over the Internet, the information required by this section may be included in the manual in that alternative form, provided the user can reasonably be expected to have the capability to access information in that form.

To ensure compliance with all non-transmitter functions the host manufacturer is responsible for ensuring compliance with the module(s) installed and fully operational. For example, if a host was previously authorized as an unintentional radiator under the Declaration of Conformity procedure without a transmitter certified module and a module is added, the host manufacturer is responsible for ensuring that the after the module is installed and operational the host continues to be compliant with the Part 15B unintentional radiator requirements.